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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,141	.01/31/2002	Richard W. Sexton	SDP271PA	2522
1333	7590	11/01/2005	EXAMINER	
BETH READ PATENT LEGAL STAFF EASTMAN KODAK COMPANY 343 STATE STREET ROCHESTER, NY 14650-2201			CHEA, THORL	
			ART UNIT	PAPER NUMBER
			1752	
DATE MAILED: 11/01/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/062,141

Applicant(s)

SEXTON, RICHARD W.

Examiner

Thorl Chea

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13 and 22-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13 and 22-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The disclosure is objected to because of the following informalities: see page 5, lines 21-35 wherein Fig. 2H and Fig. 2I are not shown in the drawing. It should be changed to Fig. 3A and Fig.3B respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 13, 22-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification as originally filed fails to provide support for the language “a conductive metal layer applied to the sacrificial controlled-release layer, the conductive metal layer having a surface contactable with the three dimensional electroformed structure, the conductive metal layer having an adhesive bond associated with the three dimensional electroformed structure, the adhesive bond between the conductive metal layer and the three dimensional electroformed structure being stronger than the adhesive bond between the sacrificial controlled-release layer and the substrate base, wherein the three dimensional electroformed structure is removable from substrate base before being removable from the conductive metal layer”.

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The paragraph [0018] of the application publication (US 2003/0143492A1) discloses, “[0018] When both layers are plated, the photoresist layer 18 is removed to separate the orifice plate from the mandrel base. For removal and recycling, the orifice plate 14 of FIG. 1 can be soaked in acetone until the parting resist layer 18 is dissolved, resulting in the structure shown in FIG. 2H. Alternatively, the multilayer orifice plate 14 may be carefully peeled, fracturing the brittle parting resist layer 18. Resist can then be chemically stripped from the orifice plate 14 and the base substrate 16. The thin copper layer 20 which has remained on the separated orifice plate is then removed with a selective etchant, leaving the completed orifice plate structure shown in FIG. 2I. The selective etchant would remove copper but not damage the nickel during the short immersion period required to etch away the copper. The orifice plate is then ready to be assembled into an ink jet printhead”. Therefore, the languages presented in the claims are not supported by the paragraph pointed out by the applicants. Therefore, they raise the issue of new matter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13, 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al (US Patent No. 4,773,971) in view of Roos (US Patent No. 4,268,610).

Lam et al discloses a mandrel of claim 8 in column 6 of Lam et al which having a glass substrate, an adhesion sheet layer and a stainless steel sheet layer. The mandrel is used in the

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process in producing ink jet printhead (column 2, lines 36-63; Sheet 5 of 10, Fig. 4C and Sheet 10 of 10, Fig. 8C). See also in column 3, lines 15-30 wherein the chrome layer is disclosed. Roos discloses a photoresist compositions with improved adhesion properties for used in making printing circuit board, lithographic plates, relief image plates or cylinders and for other applications in the photographic art. The invention deals with photoresist formulations with improved adhesion properties in both solvent and aqueous developable film so as to resist chemical attack and other kinds of degradation during etching, plating and other processing in any known manner. The resist formulation has many advantages such as capable of easy removal from metal surface during development, does not interfere with the plating cycle or leaching into plating bath; and enable the metal surface to be cleaned with water or weak acid or basic solution without the need for persulfate etch. See abstract and column 2, lines 39-54. It would have been obvious to the worker of ordinary skill in the art at the time the invention was made would have selected an adhesion layer having property equivalent to that of adhesion layer taught in Lam such as photoresist formulation taught in Roos with an expectation of achieving a layer that has improved adhesion properties in both solvent and aqueous developable film so as to resist chemical attack and other kinds of degradation during etching, and plating and, and thereby provide a mandrel as claimed. The property such as "brittle" is inherent to the layer formed by the dried resist taught in Roo.

Response to Arguments

6. Applicant's arguments filed August 15, 2005 have been fully considered but they are not persuasive for the new ground of rejection. The claimed invention is directed to a mandrel for use in a fabrication of a three dimensional electroform structure. The composition of the

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mandrel is a substrate base having a sacrificial-releasing layer and a conductive metal layer applied. The limitation that directed to three dimensional electroformed structures is related to the final product obtained by the using the mandrel. Therefore, the limitation such as ““a conductive metal layer applied to the sacrificial controlled-release layer, the conductive metal layer having a surface contactable with the three dimensional electroformed structure, the conductive metal layer having an adhesive bond associated with the three dimensional electroformed structure, the adhesive bond between the conductive metal layer and the three dimensional electroformed structure being stronger than the adhesive bond between the sacrificial controlled-release layer and the substrate base, wherein the three dimensional electroformed structure is removable from substrate base before being removable from the conductive metal layer” fails to limit the structure of the mandrel which is an intermediate product for the production of an three dimensional electroformed such as ink jet print head.

The applicants argue that the Roo's ('610) reference discloses a photoresist improve adhesion properties (abstract). However, delamination actually occurs between the metal layer and the electroformed structure, and not between the metal layer and the substrate.

The argument is not persuasive. The applicants is referred to Fig.1 wherein the madrel having substrate (16), releasing layer 18, and a metal layer (20), and Fig. 2G to Fig.3A wherein the nickel layer which is built up on the thin copper layer (20) by electroformed. The copper layer and the electroformed nickel was peeled off from the substrate (16), and the then electroformed nickel (24) is separated from the thin copper layer. The copper layer (20) which remains on the separate orifice plate is then removed by etchant but not damage the nickel during the short immersion period required to etched away the copper (page 2, 0018). There is no adhesive bond

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between the electroformed structure and conductive metal layer is found. Moreover, the electrostructure is not considered as part of the madrel, and it fails to further limit the structure of the madrel presented in the claimed and in the specification disclosure. Accordingly, the mandrel having structure as claimed would have been found prima facie obvious to the worker of ordinary skill in the art in view of the combination of the applied prior art such as presented above.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thorl Chea whose telephone number is (571) 272-1328. The examiner can normally be reached on 9 AM-5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (571)272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tchea *thc*
October 21, 2005

Thori Chea
Thori Chea
Primary Examiner
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